

Factor Contributing to Occupational Hazards among Health Workers in Mbale Regional Referral Hospital Mbale District. A Cross-sectional Study.

Grace Nambuya^{a,1}, Amiri Were

^a Kampala School of Health Sciences, P. O. Box 14263, Kampala – Uganda.

Abstract



Background:

Health workers are exposed to many occupational hazards because of the kind of environment they work in. Occupational health and safety is an important issue because of the high rates of associated morbidity and mortality of exposed workers (Ajayi AD, Garba SN, Abdul AJ, Mfuh 2006). The purpose of this study is to determine factors contributing to occupational hazards among health workers in Mbale Regional Referral Hospital.

Methodology:

The study uses a descriptive cross-sectional study design to yield results from the study in a relatively short period. This design is preferred because it involves the use of varied methodologies and data sources that will help to ensure more accuracy and stronger research outcomes by triangulating data from different methods.

Results:

According to individual factors, 46% noted that it was due to multi-tasking. Health facility-related factors leading to occupational hazards, the highest number 45% said that they did not always use protective gear. By environmental factors, the highest number 45% noted that it was due to pressure at work, and the pressure was caused by many patients at the facility.

Conclusion:

Multi-tasking, inadequate training, pressure at work can lead to occupational hazards among health workers.

Recommendations:

Provision of adequate medical supplies to the hospital, and provision of continuing medical education is key to reduce occupational hazards.

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1 Study Background

Occupational hazards can be defined as the risk to the health of a person usually arising out of employment. It can also refer to work, material, substance, process, or situation that predisposes or itself causes accidents or disease in the workplace. The history of occupational hazard awareness can be traced back to the 18th century when Bema

dino Ramazzini, who is referred to as the 'Father of occupational Medicine', recognized the role of occupation in the dynamics of health and disease (Rs Gambhir & G Singh, 2011)

Health care facilities (HCFs) are institutions that provide health care services, including counseling, clinical, surgical, and/or psychiatric consultations, and treatment services for the healthy, sick, and

the injured (Aluko, 2016). Globally, HCFs employ over 59 million workers and offer a variety of services to clients and patients, and are classified as hazardous and high-risk workplaces (Aluko, 2016). Healthcare facilities like other high-risk workplaces are characterized by a high level of exposure to hazardous agents, which significantly endangers the health and life of workers (HCWs).

Hazards are an inherent property of a substance, agent, source of energy, or situation that has the potential of causing undesirable consequences while the risk is the probability that damage to 'life, health, and the environment may occur from a hazard. In this regard, occupational hazards refer to workplace activities that have the potential to cause/increase the risk of injury or ill-health. Occupational safety is the control of hazards in the workplace to achieve an acceptable level of risk, while workplace safety generally refers to the process of protecting the health and safety of staff while on the job, irrespective of vocation (Aluko, 2016).

Occupational health and safety is an important issue because of the high rates of associated morbidity and mortality of exposed workers. An estimated 100,000 people die from occupational illnesses, while about 400,000 new cases of occupational diseases are diagnosed every year (Aluko, 2016). This affects workers in various occupations as a result of their exposure to different types and varying degrees of hazards in the workplace

Worldwide, the healthcare workforce represents 12% of the working population. Healthcare workers operate in an environment that is considered to be one of the most hazardous occupational settings. In addition to the usual workplace-related exposures, healthcare workers encounter diverse hazards due to their work-related activities. Despite this knowledge, the healthcare work environment continues to be neglected by governments and organizations.

Healthcare workers are exposed to blood-borne infections which usually expose them to diseases such as HIV, TB, hepatitis B and hepatitis C. Substantial morbidity and mortality among these workers inevitably lead to loss of skilled personnel and adversely impact healthcare services which are already strained in many low and middle-income countries (Lawrence Ndejjo and Geoffrey Musinguzi, 2015).

In sub-Saharan Africa, the scarcity of human resources for health is described as a humanitarian resource crisis due to significant emigration of trained professionals, difficult working conditions, poor salaries, low motivation, and a high burden of infectious diseases, particularly HIV/AIDS. Evidence from sub-Saharan Africa indicates that healthcare workers are frequently exposed to chemical, biological, physical, and psychosocial occupational hazards. They are constantly in contact with patients that expose them to infections and thus require proper protective measures to reduce their risk of acquisition of disease or injury. Data on occupational hazards among healthcare workers and their mitigation measures remain scarce in most of sub-Saharan Africa and Uganda in particular. Understanding the predisposing factors for occupational hazards among healthcare workers is needed to inform occupational health and safety policy and programs for healthcare workers (Lawrence Ndejjo and Geoffrey Musinguzi, 2015)

It is increasingly recognized that health workers, especially nurses and nursing technicians, are subject to a variety of health hazards. Several studies have indicated the need to identify, in a critical area such as an ICU, the factors causing hazards, as well as strategies to avoid them, so that the health of these workers is not affected. Signs of strain in nurses and nursing technicians are manifested in various forms, depending on the task complexity. Certainly, one of the most common strains is physical and mental fatigue. (HE Shimizu, DT Couto, 2010).

In a study by Baker *et al.*, (2020), about estimating the burden of United States workers exposed to infection of COVID- 19, it was discovered that approximately 10% (14.4 M) of United States workers are employed in occupations where exposure to disease or infection occurs at least once per week. Approximately 18.4% (26.7 M) of all United States workers are employed in occupations where exposure to disease or infection occurs at least once per month. While the majority of exposed workers are employed in healthcare sectors, other occupational sectors also have high proportions of exposed workers. These include protective service occupations (e.g. police officers, correctional officers, firefighters), office and administrative support occupations (e.g. couriers and messengers, patient service representatives), education occupations (e.g. preschool and daycare teachers), com-

munity and social services occupations (community health workers, social workers, counselors), and even construction and extraction occupations (e.g. plumbers, septic tank installers, elevator repair).

2 Methodology

Study area

The study was conducted at Mbale Regional Referral Hospital, District. Mbale Regional Referral Hospital is a government-owned and funded hospital. It is located 250km east of Kampala in the Centre of MbaleTown. Mbale Regional Referral Hospital serves a population of over 4 million people in 16 districts of Busia, Tororo, Butaleja, Pallisa, Budaka, Mbale, Bududa, Sironko, Manafwa, Namisindwa, Butebo, Kapchorwa, Kibuku, Bukwo, Kween, and Bulambuli. The hospital was started in the 1920s and has since grown to a 494-bed hospital

Study design

A descriptive cross-sectional study design was employed to yield results from the study in a relatively short period. This design is preferred because it involves the use of varied methodologies and data sources that will help to ensure more accuracy and stronger research outcomes by triangulating data from different methods.

Study population

The study population comprises all health workers in Mbale Regional Referral Hospital

Sample size determination

The sample size of respondents was determined using the Kish and Leslie sample size formula given below was employed in the study, (Kish, and Leslie, 1965)

$$n = Z^2P(1-P) / d^2$$

Where:

n = Minimum required sample size

Z = Is the required Z-value in 2 tails at $\alpha = 0.05$ which is = 1.96 approximately 2

d = precision whose value in this proposal is 0.1.

P= conventionally taken as 0.5 because there was no documented literature about the subject at the time of this proposal. By substituting the formula;

$$0.12$$

$$n = 22 \times 0.5 \times (1 - 0.5)$$

$$0.01$$

$$n = 4 \times 0.25$$

$$0.01$$

$$n = 1$$

$$n = 100 \text{ Respondents}$$

Therefore, the researcher considered 100 respondents from Mbale Regional Referral Hospital.

The participants were selected during the study

Sampling technique

Simple random sampling technique was employed to choose the participants for the study

Sampling procedure

Convenience sampling methods were used where health workers available and easy to reach were involved in the study.

This method involved the sample being drawn from the part of the population that was close to hand. People who were willing and available to participate were used in the study. The method was cheap and easy to conduct and the data needed was readily available.

Definition of variables

The dependent variable in this study was factored in contributing to occupational hazards among health workers and the independent variable for the study was occupational hazards among health workers.

Data collection tool

As for the study, data shall be collected using a questionnaire which is defined as a predetermined, written list of questions typed in English that may be answered by the respondent without a supervisor or explanation by the interviewer, therefore this helps the researcher to reduce on the possibility of getting bias from the respondent. As a structured type of questionnaire shall be designed to allow the respondents to write responses they want and complete them in time. It further enables the researcher to collect data from a large population in a short period.

Data collection procedure

An introduction letter was obtained from the principal Kampala School of Health Sciences and then taken to the office of the District Health Officer (D.H.O) Mbale district who forwarded the researcher to the medical superintendent Mbale Regional Referral Hospital. Who granted permission to proceed with the data collection with the facility and was required at every department to be granted permission to collect data from there.

Pre-testing of questionnaire

To ensure validity and reliability of the tool, the researcher undertook certain measures; whereby the researcher was regularly present to draft research tools to the research assistants for advice and assistance. The researcher pre-tested the first draft

of the questionnaire among ten respondents in Mbale Regional Referral Hospital among 10 health workers to make necessary corrections to produce a final copy.

Data management procedure

After data was collected, it was checked for completeness and accuracy. The questionnaires that were inaccurately or incompletely filled were completed before the respondents left the health facility. The questionnaires were locked in the cupboard and shall be accessed by the research team only.

3 Data analysis

Data was analyzed manually using A4 sheets and then fed into Microsoft excel to generate bar graphs, tables, and pie charts for easy presentation.

Observational checklist

This tool contains a list of areas the researcher will observe during the study. The checklists will help the researcher carefully evaluate the situation at hand without having to consult anyone.

Quality control

Forms were checked for completeness before the respondent level to ensure that the methodology was able to answer the objectives of the study.

Questionnaires were pre-tested and administered to 10 respondents among health workers in Mbale Regional Referral Hospital and adjustments were made appropriately based on their responses.

Data collection tools were designed appropriately to ensure that they were of quality for example; questionnaires were structured with non-ambiguous and well-spaced questions to avoid congestion and provide tidy work.

Inclusion criteria and exclusion criteria

Inclusion criteria

All health workers of Mbale Regional Referral hospital that were present during the period of data collection were included.

Exclusion criteria

All health workers of Mbale Regional Referral Hospital were absent and did not consent to the study

4 Data analysis and interpretation

Data were cleaned, coded, and entered into Microsoft Office Excel. Descriptive (univariate) data

were presented as frequencies and percentages and illustrated using frequency tables, pie charts, and bar graphs. Qualitative data collected during the interviews were coded in themes and entered into master sheets by the researcher. This was then analyzed manually using the Pearson Chi-square independent content analysis technique and findings were integrated during report writing in form of quotes and narratives to supplement the quantitative data.

Ethical consideration

Ethical considerations in the conduct of this study will be followed to prevent ethical dilemmas. To ensure this, the researcher will obtain permission for the study from the medical superintendent of the hospital. Once permission is granted, respondents will receive an explanation of the study before enrolment and only those willing to participate shall be involved. The research processes and procedures will be used based on voluntary informed consent and the researcher further will ensure that any information obtained from the respondents will be kept confidential and no name or identification number of the respondents will appear on the questionnaire or study results.

5 Data presentation and Analysis:

Socio-Demographic characteristics of respondents

According to table 1, the following variables are presented:

Age

Half of the respondents 50(50%) were within the age range of 35-44 years followed by 22(22%) who were between 25-34 years, 18(18%) who were between 20-24 years, and the least number 10(10%) were between 45-50 years.

Sex

More than half of the respondents 53(53%) were females while the least number 47(47%) were males

Marital status

Out of the 100 respondents, more than half 53(53%) were married, followed by 30(30%) who were single, 11(11%) who were divorced, and the least number 6(6%) who were widows

Religion

Less than half of the respondents 44(44%) were Catholics, followed by protestants who were repre-

Table 1. A table showing socio-demographic characteristics of respondents.

Variable	Category	Frequency(N=100)	Percentage
Age(years)	20-24	18	18
	25-34	22	22
	35-44	50	50
	45-50	10	10
Sex	Male	47	47
	Female	53	53
Marital status	Single	30	30
	Married	53	53
	Widow	06	6
Religion	Divorced	11	11
	Protestant	33	33
	Born again	13	13
	Muslim	10	10
Occupation	Catholic	44	44
	Nurse	63	63
	Dispenser	10	10
	Clinician	06	6
	Lab technician	10	10
	Midwife	11	11

sented by 33(33%), born again were represented by 13(13%), and Muslims contributed the least number 10(10%).

Occupation

The majority of the participants 63(63%) were nurses, 10(10%) were dispensers, 10(10%) were lab technicians, 6(6%) were clinical officers and the minority were midwives.

Individual factors contributing to occupational hazards among health workers.

Figure 1 above shows that less than half of the 45(45%) said not often, 35(35%) always said and the minority 20(20%) said they would sometimes wear protective gears.

According to table 2, when respondents were asked about the causes of occupational hazards, less than half 40(40%) reported that it was due to multi-tasking followed by 35(35%) claimed it was due to physical health, 20(20%) noted that it was due to faulty equipment and the least number 5(5%) noted that it was due to inability to use medical equipment

Out of the 100 respondents who participated in the study, a majority 95(95%) said they did not have genetic problems and the minority 5(5%) had genetic problems

When the 5 respondents who had admitted having genetic problems were asked to which extent

the condition caused the occupational hazards, less than half 2(40%) of the respondents said low, 2(40%) said moderate and the least number 1(20%) said large.

Results in figure 2 show that more than half of the respondents 55(55%) were trained yearly, 37(37%) were trained monthly and the least number 8(8%) were trained weekly.

5.1 Health facility factors contributing to occupational hazards among health workers

According to table 3 above, when the participants of the study were asked whether there is the provision of adequate protective gear to health workers, the majority 64(64%) said they were not often provided followed by 26(26%) who said they were always provided and lastly the minority 10(10%) who said some times.

During the research to find out the hospital-related factors contributing to occupational hazards among health workers, the respondents were asked about the mechanical condition of the medical equipment used at the health facility, and out of the 100 respondents the majority 60(60%) said good, 25(25%) said fair and the minority 15(15%) said poor.

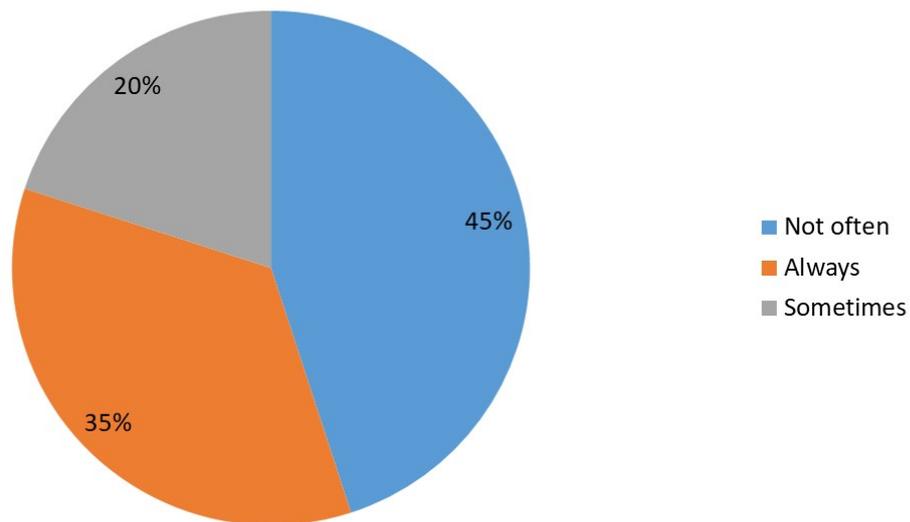


Figure 1. How often respondents use protective gears n=100.

Table 2. A table showing individual factors contributing to occupational hazards among health workers.

Variable	Category	Frequency(N=100)	percentage(%)
Cause of occupational hazard	Faulty equipment	20	20
	Inability to use medical equipment	05	5
	Physical health	35	35
	Multi tasking	40	40
Genetic health Problem	Yes	05	5
	No	95	95
Extent to which the condition causes occupational hazards	Low	02	40
	Moderate	02	40
	Large	01	20

On whether the health facility has documented SOPs of tasks carried out, half of the respondents 50(50%) said yes and that is used less often followed by 30(30%) who said yes and that is used often and the least number of respondents 10(10%) said they did not have the documented SOPs.

Results in figure 3 above show that less than half of the participants 46(46%) were working for 12 hours followed by 44(44%) who were working for 8 hours, and the least number of participants 10(10%) who were working for 6 hours.

Respondents were also asked about the measures put in place to prevent hospital-acquired infections and out of the 100, half of the respondents

50(50%) said there is the provision of adequate protective gear, and 30(30%) admitted there is patient isolation, 20(20%) said there other measures which were put in place and these included isolation of the facilities that treat them from other facilities and no participant said no measures were being taken.

indicates that the majority of the respondents 75(75%) had experienced occupational hazards while the minority 25(25%) has not experienced occupational hazards.

Out of the 75 respondents who had experienced occupational hazards, less than half 40(53.3%) said they suffered needle pricks followed by 18(24%)

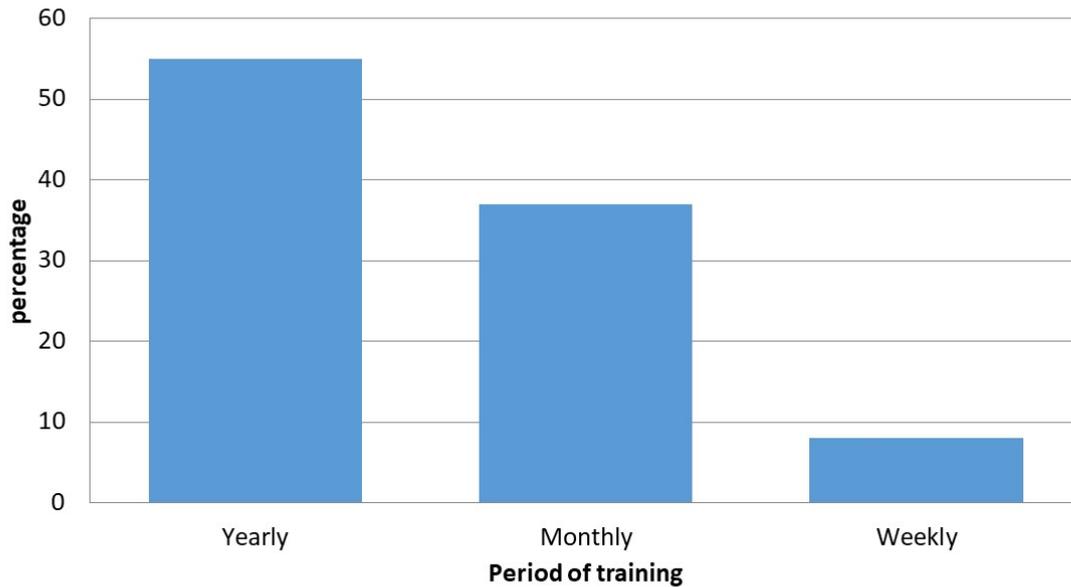


Figure 2. How often health workers receive training about occupational hazards (n=100).

Table 3. table showing health facility factors contributing to occupational hazards among health workers.

Variable	Category	Frequency(N=100)	Percentage(%)
Provision of adequate protective gears to health workers	Always	26	26
	Sometimes	10	10
	Not often	64	64
Mechanical condition of medical equipment	Poor	15	15
	Fair	25	25
	Good	60	60
Does the health facility have documented SOPs of tasks carried out	Yes and used less often	50	50
	Yes and are used often	30	30
	No it doesn't have them	20	20
Measures put in place to prevent hospital acquired infections	Patient isolation	30	30
	Provision of adequate protective gears	50	50
	No measures	-	0
	Others	20	20

Table 4. A table showing whether respondents have ever experienced occupational hazards.

Variable	Category	Frequency(N=100)	Percentage
Ever experienced occupational hazard	Yes	75	75
	No	25	25
If yes, type of hazard mentioned	(N=75)		
	Needle pricks	40	53.3
	Stress	18	24
	Body fluid spillages	10	13.3
	Exposure to T.B patients	07	9.3

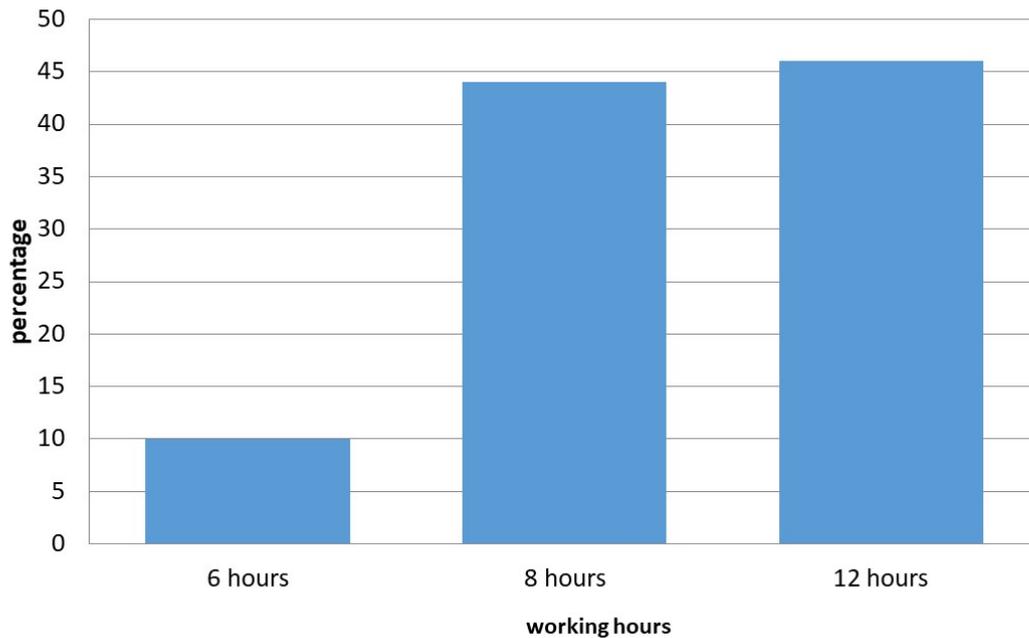


Figure 3. Working hours of health workers (n=100).

who said that they experienced stress, 10(13.3%) who experienced spillage of body fluids and the least number 7(9.3%) had experienced exposure to T.B patients.

5.2 Environmental factors contributing to occupational hazards among health workers

According to table 5, when respondents were asked about their working environment more than half of the respondents 55(55%) said it was uncomfortable while 45(45%) said it was comfortable.

The respondents were also asked whether they feel pressure at work and less than half 45(45%) said they felt much pressure followed by 35(35%) respondents who said they felt moderate pressure, 15(15%) respondents who said they felt little pressure and the least number of respondents 5(5%) said they never felt any pressure at all.

About causes of work-related pressure, out of the 95 respondents who had admitted being pressured at work, more than half 54(56.8) said it was due to too many patients at the facility, followed by 27(28.4%) who said that they were working in multiple facilities and the least number 14(14.7%) who said they were assigned hard tasks by the manager.

Respondents were also asked if their culture and religion encourage infectious disease testing and screening and the largest number 95(95%) said yes while the least number 5(5%) said no

6 Discussion of Study Findings

Socio-Demographic data

The study showed that half of the respondents (50%) were in the age range of 35-44 years followed by 22% who were between 25-34 years, 18% who were between 20-24 years, and the least number 10% were between 45-50 years. Some respondents who were below 25 years had less experience and so were more prone to occupational hazards.

More than half of the respondents 44% were Catholics, followed by protestants who were represented 33%, born again were represented 13%, and Muslims contributed the least number 10%. All respondents belonged to different types of religions and none of them was a pagan implying that they were receiving different types of guidance and counseling from their spiritual leaders.

Out of the 100 respondents, more than half 53% were married, followed by 30% who were single, 11% who were divorced, and the least number 6% who were widows. The majority being married im-

Table 5. A table showing environmental factors contributing to occupational hazards among health workers.

Variable	Category	Frequency(N=100)	percentage(%)
Working environment	Comfortable	45	45
	Uncomfortable	55	55
	A little	15	15
Pressure at work	Moderate	35	35
	Much	45	45
	Not at all	05	5
Causes of work related pressure	(N=95)		
	Working in multiple facilities	27	28.4
	Hard tasks assigned by manager	14	14.7
Does your culture and religion encourage infectious disease testing and screening	Too many patients at the facility	54	56.8
	Yes	95	95
	No	05	5

plies that they are above 18 years are therefore are mature adults who obey the law.

The majority of the participants 63% were nurses, 10% were dispensers, 10% were lab technicians, 6% were clinical officers and the minority were midwives. Nurses do a lot of work at health facilities and are therefore more prone to occupational hazards than any other profession which calls for constant training.

Individual factors contributing to occupational hazards among health workers

When respondents were asked about the causes of occupational hazards, less than half 40% reported that it was due to multi-tasking. This implies that health workers who carried out many tasks ago were affected and is in agreement with a study by (Lotte N. Dyrbye, MD, MHPE, 2017) who discovered that among the changes affecting clinical practice are new payment and delivery approaches, electronic health records, patient portals, and publicly reported quality metrics—all of which change the landscape of how care is provided, documented, and reimbursed. Navigating these changes are health care professionals (HCPs), whose daily work is critical to the success of health care improvement. As a result of these changes and resulting added pressures, many HCPs are burned out, a syndrome characterized by a high degree of emotional exhaustion and high depersonalization (i.e., cynicism), and a low sense of personal accomplishment from work.

On how often health workers receive training, More than half 55% noted that they were trained yearly. At the same time, health workers in ma-

ternity also stand a higher risk of splashes when conducting deliveries.

Health facility factors contributing to occupational hazards among health workers

Another study showed that less than half of the participants 46% were working for 12 hours followed by 44% who were working for 8 hours which implies that almost all participants were working for long hours which is one of the factors that can lead to occupational hazards. This is similar to a study conducted by (Rikinkumar S. Patel, Ramya Bachu, Archana Adikey, Meryem Malik, and Mansi Shah on 25th October 2018) about factors related to physician burnout and its consequences. It was discovered that work factors that contribute to physician burnout include excessive workloads, long working hours, specialty choice, frequent call duties (night call or weekend call), comprehensive documentation in electronic medical records, time spent at home on work-related factors, risk of malpractice suits, and methods physicians use to deal with patient death and illness.

When the participants of the study were asked whether there is the provision of adequate gear to health workers, the majority of the 64% said they were not often provided. This implies that health workers are easily exposed to body secretions, tissues, or fluids. This is supported by a study conducted in Kenya by (Chankova, Muchiri & kombe, 2013), which concluded that the lack of safety gear by health workers makes them afraid to touch clients leading to a reduction in the quality of care clients receive. This is because often health workers come into contact with bacteria,

viruses, fungi, or parasites when handling mothers, contaminated objects, body secretions, tissues, or fluids.

Another study showed that the majority of the respondents 75% had experienced occupational hazards and out of the 75 respondents who had experienced occupational hazards, less than half 53.3% said they suffered needle pricks followed by 24% who said that they experienced stress, 13.3% who experienced spillage of body fluids and the least number 9.3% had experienced exposure to T.B patients. This is in agreement with another study which indicates that these healthcare workers are at high risk of contracting blood-borne illnesses such as HCV, HBV, and HIV. This review identified that sparse data exist exploring factors correlated with these exposures and inconsistent research among studies that explored these factors.

Environmental factors contributing to occupational hazards among health workers

When respondents were asked whether they feel pressure at work less than half of the respondents 45% said they felt much pressure followed by 35% of respondents who said they felt moderate pressure, 15% of respondents who said they felt little pressure, and out of the 95 respondents who had admitted being pressured at work, more than half 56.8% said it was due to too many patients at the facility, followed by 28.4% who said that they were working in multiple facilities and the least number 14.7% who said they were assigned hard tasks by the manager. This is related to a study about factors related to physician burnout and its consequences, where it was discovered that work factors that contribute to physician burnout include excessive workloads, long working hours, specialty choice, frequent call duties (night call or weekend call), comprehensive documentation in electronic medical records, time spent at home on work-related factors, risk of malpractice suits, and methods physicians use to deal with patient death and illness, (Patel et al., 2018).

7 Conclusion

Regarding individual-related factors, when respondents were asked about causes of occupational hazards, 40% said it was due to multi-tasking.

Regarding health facility factors, when respondents were asked how often they received training, 55(55%) noted that they were trained yearly. In ad-

dition, 75% had experienced occupational hazards of which needle pricks were the most experienced hazard.

Results on environmental factors indicate that 45% of the respondents mentioned pressure at work due to too many patients at the health facility.

Recommendations

The government of Uganda should provide adequate medical supplies to the hospital to protect health workers from occupational hazards.

Hospital administrators should ensure that health workers are not overworked to minimize the risk of occupational hazards at the health facility.

Hospital administrators should also ensure that health workers are provided with continuous medical education to empower infectious disease management.

8 Acknowledgement:

First and foremost, am grateful to my supervisor Mr. Were Amiri for accepting to be part of this research by spending part of his precious time guiding me to enable the flow of this report book. It's because of his efforts that I managed to come up with this report book. May the Lord bless the works of your hands.

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9 List of abbreviations

WHO: World Health Organisation

HCFs : Health Care Facilities

MoH : Ministry of Health

NAs : Nursing Assistants

UAHEB : Uganda Allied Health Examinations Board

CBOs : Community Based Organisations

HIV: Human Immune Virus

HCWs: Health Care Workers

SOPs: Standard Operating Procedures

10 Definition of key terms

Occupational Hazards: This refers to the risk of health of a health worker usually arising out of employment

Health Workers: These are individuals that provide health care services to health and sick people.

Case: This refers to an instance of a specific condition or set of symptoms

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